

High-Bandwidth Data Communication Technology

HoloLink Technology Speeds Up Communications at Lower Cost

POC Physical Optics Corporation 

Technology and Innovation

In 1993, Physical Optics Corporation (POC) was selling fiber optic components in an extremely competitive market. The company decided to distinguish itself with a unique product solving a critical telecommunication challenge: bandwidth. The company already had a concept when they came across DARPA and a military need that aligned with their idea.

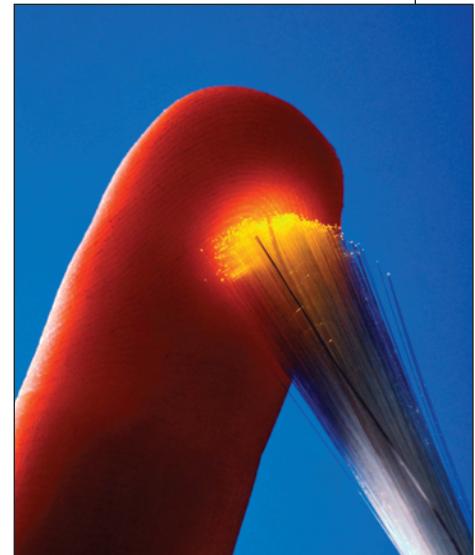
With DARPA SBIR sponsorship, POC optimized their concept to meet military specifications and came up with a fiber optic, unidirectional, multiplexing system called HoloLink. This technology significantly increases bandwidth transmission over existing fiber networks by allowing video transmission of different signal formats through a single fiber for parallel, high-bandwidth data communication.

This solution reduces synchronization constraints, which reduces the cost per bit by adding to the capacity of existing fiber and reducing load on nearly saturated fiber plants.

The HoloLink system is based on POC's patented wavelength division multiplexing (WDM) technology. POC's HoloLink technology was used by the U.S Air Force and the U.S. Army as part of a surveillance system for a U.S./Israeli defense program. The commercial sector embraced the product, particularly in areas of intense bandwidth requirements, such as medical graphics transport, Internet services, multimedia services, and financial transactions.

Joint Collaborations

The company's collaborative successes include strategic partnerships for component manufacturing; technology licensing to original equipment manufacturers; strategic partnerships with research and development institutes, national laboratories, and government and military agencies; and strategic alliances with advanced system integrators of high-end products.



Lessons Learned

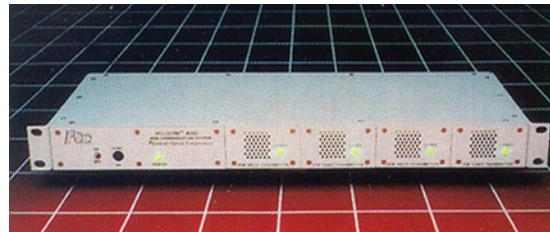
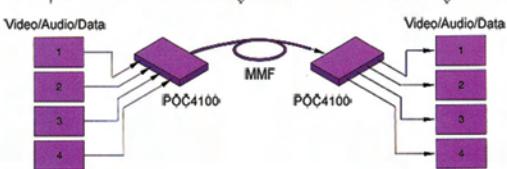
- Recognize early in the program what technologies can be commercialized and/or developed to meet military and/or commercial needs. For both types of applications, a solution has to be innovative and mature, which is tremendously difficult to achieve within a short period of time with limited resources. Therefore, prioritize early and make investment decisions based on commercialization needs.
- Transitioning technology from SBIR to military or commercial applications requires a team effort. Bring scientists and engineers together with mechanical/electrical/systems integrators to help work out the transition action plan.
- Compete in a very competitive market by exploiting a market niche based on innovation. The knowledge capital and effective interaction of 48 PhDs has worked well for Physical Optics.

POC 4100 SERIES



Multi-Channel Unidirectional Video/Audio Systems
Transmit unidirectionally up to four(4) video or (4) mono audio and (4) video channels over one multimode fiber

Applications-Up To 4Km
Security Surveillance. Distance Learning. Media Retrieval. Video/Audio Program Distribution



The Hololink system's user interface.

Filing and maintaining patents has helped the company to develop solutions with comparable advantages as well as generating licensing revenues.

Economic Impact

DARPA funding was critical in moving this technology from concept to product. The HoloLink technology contributed significantly to the expansion of one of POC's major divisions, specializing in communication. It has been used in three product families involving passive wavelength division multiplexers and high-speed fiber optic video/audio/data transmission links. This project was also important in establishing a new production line in 2000 that achieved ISO:9000-2001 certification. In addition, it was instrumental in launching a spin-off company, Broadata Communications, and generated several licensing agreements for various applications.

The entire product portfolio at POC can be directly or indirectly traced to the SBIR program, since the company's principal product for many years, Light Shaping Diffuser™—used in cell phone displays and

auto dome lights—was also developed under an SBIR. From its inception, POC has grown at a rate of 8 to 25 percent over 20 years. The company currently holds 88 patents and has others pending, most based on research that was originally funded under SBIR.

About the Company

Started in 1985, this private employee-owned Southern California company has emerged as a innovative small systems integrator and value-added components manufacturer in the areas of light shaping displays, information technology, photonic systems, electro-optics, and holography. Recently, Inc. Magazine ranked POC as 24th on their "Innovative 50" list of the most innovative companies in America. ■

Company Information

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